

REMARKS

The Office Action dated August 19, 2011 has been carefully reviewed and the following remarks are responsive thereto.

Claim 1-16 and 19-25 has been amended, and claims 17, 18 and 26 have been deleted. No new matter has been added. Claims 1-16 and 19-25 remain pending upon entry of the present amendment. Reconsideration and allowance are respectfully requested.

Amendment

1. To avoid narrative format of many dependent claims, the Applicants amend the all dependent claims, such as claims 3, 9, 19 and 23, etc.
2. Delete some description on technical effects in claims, such as claims 6 and 22.
3. Amend the definition of the independent claims 1 and 7 based on FIGS. 4A & 4B and the corresponding description in the original specification of the present application.
4. Incorporate claims 17 and 18 into claim 12, and accordingly delete claims 17, 18 and 26.
5. Additionally, amend some obvious spelling and grammar errors for the all claims.

Please see the detailed amendments from the "Amendments to the Claims".

Claim Rejections - 35 U.S.C. § 103

Claims 1-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoppenstein (US 2004/0204109 A1) in view of Lipka (US 2006/0040624 A1), and in further view of Takeuchi (US 2002/0177468 A1). Applicants have amended claims 1-16 and 19-25 and deleted claims 17, 18 and 26, and the rejection is respectfully traversed based on the above amendments of claims.

The amended claim 1:

The amended claim 1 defines:

"A device for realizing beam-forming in CDMA system, said device comprising:
in a forward signal flow, at least a base band system, an optical transceiver system, transceiver systems, an analog fixed beam-forming network, a power amplifier, a transmission filter of a radio frequency front end and an antenna system; and

in a reverse signal flow, at least the antenna system, a reception filter of a radio frequency front end, a low noise amplifier, the analog fixed beam-forming network, the transceiver systems, the optical transceiver system and the base band system;

wherein, said base band system comprises at least one base band chip, and the at least one base band chip have a plurality of sectors;

wherein, the optical transceiver system comprises a first optical interface board close to the base band system, a second optical interface board close to the transceiver systems, and an optical fiber between the first optical interface board and the second optical interface board, the first and second optical interface board being used to interconvert electronic signals and optical signals input; and the optical transceiver system is configured to enable the base band system be placed in a warehouse so as to make the base band system support the plurality of sectors, and to enable a radio frequency part close to the antenna so as to reduce power loss;

wherein, the base band system is configured to, when transmitting forward signals on a common channel, make different beams be reflected to the sectors of the at least one base band chip to have different time delays, so that the different beams are not coherent with one another even when the different beams carry same information.”

As remarked in the previous responses, the technical features “the base band system is configured to, when transmitting forward signals on a common channel, make different beams be reflected to the sectors of the at least one base band chip to have different time delays, so that the different beams are not coherent with one another even when the different beams carry same information” in the amended claim 1 of the present application is not taught by Takeuchi in combination with Hoppenstein and Lipka. Takeuchi, in combination with Hoppenstein and Lipka, does not disclose **“when transmitting forward signals on a common channel, different beams have different time delays”** defined in the amended claim 1 at all.

By the technical features “when transmitting forward signals on a common channel, the base band system is configured to make different beams be reflected to the sectors of the at least one base band chip to have different time delays, so that the different beams are not coherent with one another even when the different beams carry same information”, the amended claim 1

of the present invention **solves** the problem that the fixed beams in some area correlate with and counteract one another or are greatly reduced due to the correlating addition of the space vectors of each fixed beam when the multiple antenna CDMA system transmits the common channels, and makes the strength of the pilot channel and the traffic channel in corresponding proportion in the coverage area. And compared with the prior art, the amended claim 1 of the present invention simplifies the equipment, algorithm and design of the correction schemes, and improves the signal to noise ratio of receiving signals by the mobile station (see, e.g., second paragraph on page 10 of the specification).

In view of the above, Hoppenstein, Lipka and Takeuchi, either individually or in combination, does not teach the technical scheme of the amended claim 1. Therefore, the subject matter of the amended claim 1 would have been non-obvious at the time the invention was made to a person having ordinary skill in the art. Accordingly, the amended claim 1 conforms to the provisions of 35 U.S.C. 103.

The amended claims 2-6 and 19-22:

The amended claims 2-6 and 19-22 are dependent on the independent claim 1 directly or indirectly, and are thus allowable for at least the same reasons as the amended claim 1.

The amended claim 7:

The amended claim 7 of the present application defines a device for realizing beam-forming in CDMA system, and defines, among other features, “the base band system is configured to, when transmitting forward signals on a common channel, make different beams be reflected to the sectors of the at least one base band chip to have different time delays, so that the different beams are not coherent with one another even when the different beams carry same information”.

For similar reasons as those stated above for the amended claim 1, Applicants respectfully submit that the amended claim 7 of the present application also conforms to the provisions of 35 U.S.C. 103.

The amended claims 8-11 and 23-25:

The amended claims 8-11 and 23-25 depend on the independent claim 7 directly or indirectly, and are thus allowable for at least the same reasons as the amended claim 7.

The amended claim 12:

Applicants have incorporated claims 17-18 into claim 12, and accordingly deleted claims 17, 18 and 26.

The amended claim 12 of the present application defines a method for realizing beam-forming in CDMA system, and defines:

“step one: in a base band, reflecting base band signals of each fixed beam to sectors of base band chips;

step two: making the base band signals of the fixed beams reflected to corresponding sectors of the base band chips have different time delays when transmitting forward signals on a common channel;

wherein, in said step two:

a quantity of the time delays is such that output signals of each sector of the base band chips do not correlate with one another when transmitting common channel information; and

wherein, when transmitting the common channel information, common channel beams do not correlate with one another when forming by making beams at an end of an antennas have different time delays, to avoid some area correlating with and counteracting one another when each fixed beam composing beams covering a whole sector.”

For similar reasons as those stated above for the amended claim 1, Applicants respectfully submit that the amended claim 12 of the present application also conforms to the provisions of 35 U.S.C. 103.

The amended claims 13-18 and 26:

The amended claims 13-16 depend on the independent claim 12 directly or indirectly, and are thus allowable for at least the same reasons as the amended claim 12.

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As such, Applicants respectfully submit that claims 1-16 and 19-25 are in condition for allowance.

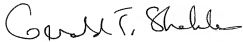
Applicant hereby requests reconsideration and reexamination thereof.

No further fee or petition is believed to be necessary. However, should any further fee be needed, please charge our Deposit Account No. 23-0920, and deem this paper to be the required petition.

With the above amendments and remarks, this application is considered ready for allowance and applicant earnestly solicits an early notice of same. Should the Examiner be of the opinion that a telephone conference would expedite prosecution of the subject application, he/she is respectfully requested to call the undersigned at the below listed number.

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Respectfully submitted,



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